

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper - Second-class postage paid at Boston, Mass.

Vol. III No. 16

April 23, 1969

Price: \$9/year



The TC700 electronic teller terminal is the newest member of Burroughs' terminal-computer family.

Burroughs Again Expands Terminal-Computer Family

DETROIT — A new teller terminal computer, based on the TC500 terminal, has been announced by Burroughs Corp. to serve the banking industry and other industries where multi-function terminals are needed in a window-oriented or counter-oriented business.

The unit can operate either as a remote terminal with Burroughs computers or with those of any other manufacturer who specifies industry specifications, and is ideally suited to the real-time processing environment. Ray Macdonald, Burroughs president, said:

Exceeds Standards

The terminal surpasses the specifications established by the special on-line committee of the National Association of Mutual

Savings Banks and the National Society of Controllers and Financial Officers of Savings Institutions. Macdonald said he added that he believed this was "the first teller console to meet industry standards."

The unit uses the standard communication procedures proposed by the USA Standards Institute and the International Standards Organization, and adopted by the European Computer Manufacturers Association. The unit will operate with all computers which meet these specifications. Macdonald said.

Programming

Programming for the device is "firmware," a sequence of instructions, alterable by memory or the operator, which calls up the subroutines used to perform the unit's functions. Burroughs will supply software programming or customer software on a fee basis, a pilot estimate is for both the TC500 and the L300.

The system consists of five major modules: operator keyboard, memory unit, disk logic circuitry, I/O controls, and high-speed printer.

Price for the system range from \$8,840 to \$13,400, and deliveries will start in January 1970. The initial demonstration of the system will take place at the Miami convention of the Savings & Loan Controllers, May 19-21.

On the Inside

Downtime Jumps 300% After System Is Audited

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Plug-to-Plug Compatibility Wins Defense Department's Support

WASHINGTON, D.C. — The Defense Department is taking immediate action to acquire peripherals competitively whenever technically feasible.

Robert G. Mori, assistant secretary of defense, has told the Army, the Navy, the Air Force, and other defense groups to implement the policy immediately for magnetic tape stations and other peripheral equipment. Compatibility can be readily established. He also told them that outside vendors of plug-to-plug compatibles should be given equal consideration with the vendors

of the central processing units in all cases where peripherals are being added or replaced.

A Defense Department spokesman told CW that the main area of plug-to-plug compatibility currently being considered involves magnetic tape drives and disk drives. Other areas would include page readers and optical readers which were not necessarily part of the replacement vendor systems, he said.

The Defense Department intends to watch carefully the problems that arise, particularly with regard to the responsibility

for maintenance of the multi-vendor systems, he said.

The introduction of competition into this area follows an argument pressed by the independent hardware companies for a year.

Qualification List

The Defense Department called on the General Services Administration to draw up a list of peripherals which would show for each one the central processing units with which it can be connected. The suggested list would (Continued on Page 5)

GE Announces 2 High-Stack, Multiple-Spindle Disk Drives

PHILADELPHIA — GE has announced two new mass-memory devices aimed at users of large-scale systems, including time-sharing and other applications requiring greater quantities of storage than GE previously offered.

The DSS-170 is competition for IBM's nine-drive 2314s. It is also a nine-drive unit with 11-disk high stacks.

It has an average access time of

75 msec, GE said, and transfers at the rate of 416,000 characters per second. Its capacity is 220,000,000 characters.

GE priced it at least at \$5,675 per month, the same as the larger of the 2314s.

The DSS-167 is a five-drive device with a capacity of 90,000,000 characters, expandable to 120,000,000. Access time of the DSS-167 is also 75 msec, but transfer rate is halved, to

20,000 characters per second. The 90,000,000-character storage device will lease for \$3,185 per month, with the expansion costing an extra \$675 per month.

The company expects that the new devices will extend application of its Integrated Data Store (IDS) data management system.

Deliveries of the new units are expected to begin in 15 months.



GE's new DSS-167 disk storage subsystem uses high-stack disk packs.

IBM's 1130 and 1800 Markets Attacked By Compatible Computer, 60% Price Cut

ORLANDO, Calif. — A company from the industrial automation market said it could be fully compatible with both the 1800 and the 1130, plus a class of register-to-register computers. Sixteen general-purpose registers are provided.

The 1130 has a 16-bit word length, with memory available in increments of 4K to 32K. Direct addressing to the full 32K of 960-mec core is provided.

The company claims that the machine will process over 400,000 instructions per second.

The instruction repertoire is said to be fully compatible with both the 1800 and the 1130, plus a class of register-to-register computers. Sixteen general-purpose registers are provided.

The 1800 is designed to supersede industrial computation. Standard peripherals include tape, disks, cards, printers, and teletypewriters. The I/O system is said to include 16 automatic program interrupt levels, programmable interrupts, and direct-to-memory I/O chan-

nels.

Software includes assemblers,

computers, real-time monitors, and control programs, a company spokesman said.

The basic system price, with input and keyboard, will be "less than \$20,000," he said.

"Adding the equivalent IBM 1800,"

Deliveries are scheduled to begin in summer.

General Automation has off-

fices at 706 W. Katella St. here.



The GE-615, GE's new medium-scale computer system.

GE's Newest Entry Is a Slower Less-Expensive GE-635 System

PHOENIX - The GE-615 is the latest entry in the medium-scale computer market.

In competition with the IBM 360/50, Univac 1106, and Burroughs 3500, among others, the new processor is essentially a somewhat slowed-down, less-expensive version of the GE-635.

The system is designed for three computer modes of operation: multiprogrammed local batch processing, remote batch operation from different-speed terminals, and reactive time-sharing, GE said.

The user of the 635 will be able to use the full line of peripheral equipment available to the larger 600 series processors, including tape units. The system is controlled by the General Comprehensive Operating System (Geos) using batch-oriented compilers such as Fortran IV and Texteditor, a programming language including Basic, Fortran, and Cobol, and application software such as Apt III, Linear Programming, and parts explosion, he said.

The processor cycles one 36-bit word in 2 microseconds and is

said to add 244,000 numbers per second. It is available in sizes of 65K to 256K words.

A system with 65K of main memory, 30 K of characters of disk storage, and a card punch, eight magnetic tapes, 1200-line-per-minute printer, and console typewriter will rent for slightly under \$30,000 per month, he said.

Two communications processors can be used - the Data-net-30 and the new GE-355.

The company expects to start delivering the 615 in June

Computers-in-Law Institute Set on Software Protection

WASHINGTON, D.C. - A Software Protection Workshop sponsored by the Patent Office was opened yesterday at the direction of the George Washington University Computers-in-Law Institute, will be held here at the Hotel America June 2-4.

The program will consist of a discussion of various ways in which software can be protected through patents, trade-secret agreements, and government and private contract arrangements.

The course will be under the direction of Howard R. Popper of Bell Laboratories in conjunction with James E. Kayton. Its primary orientation will be toward lawyers serving computer users and software and

hardware manufacturers. For those who feel a hardware technology tutorial will be held during the first morning of the session.

Kayton said that, properly prepared, software patent applications could lighten the burden of the Patent Office and that trade-secret agreements can be worded to remove ambiguities and reveal the true mutual intent

of the parties involved. A discussion of the possible changes in the patent laws to make software rulings will be a major part of the second day's discussion. The NASA data clauses pertinent to software will be one of the topics Wednesday, the final day.

Further information may be obtained from the Patent Resources Group, 2011 I St., Washington, D.C. 20006.

Off-Line Magnetic Tape Serves As Input to Microfilm Recorder

NEWTON, UPPER FALLS, Md. - An off-line microfilm recorder designed to take input from an off-line magnetic tape has been announced by Beta Instrument Corp.



The Beta Com 600.

The Beta Com 600 is built around a Digital Equipment Corp. PDP-11 computer, available in either 4K or 8K sizes. The basic system consists of the computer, a tape drive, and a precision CRT film recorder.

The company claims equal capability in forms and graphics reproduction.

Standard features include the ability to accept non-print tape formats, without reformatting; a 128-character set with upper and lower case letters and proportional spacing; programmable tabbing and skipping; and graphics, a Beta spokesman said.

The price will be about \$125,000, with an optional rental plan, he said. Production deliveries are scheduled to begin Nov. 1.

The company has offices at 377 Elliot St. here.

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System Was Running Fine

By Peter L. Briggs

WALTHAM, Mass. — A strange tale of the problems which a computer manufacturer's policy can create for a user came to light this month. The procedure of "system audit" used by some manufacturers to "bring the equipment up to factory specifications," has made operations very difficult for one time-sharing service here.

System Audit and Support

The user asked Computerworld to examine his records of downtime and correlate this information with the timing of the

"audit." The figures show (see chart) that after the audit was performed, system downtime for various reasons increased during normal working hours about 3000% (30 to 1) over the average for the previous three months.

An additional problem, and one faced by most non-IBM users, is the lack of manpower for telephone support. For several months the user had been complaining of the down-time with which the manufacturer responded to service calls and the lack of availability of spare parts.

According to the user, at least

many manufacturers perform a periodic overhaul of each customer's machine to bring the machine up to "factory specifications." This periodic annual, functional check is called system audit, and the customer is frequently not informed when it is being done. One common result of such audits is a sudden rash of equipment failures from a machine which has been functioning well for some time.

Some good things have come out of this series of problems since the audit. The user has had to wait up to response time for calls, and, in fact, the service has been almost immediate since then. The manufacturer has had at least one qualified expert on the user's premises within two hours of the call.

Real-Time Maintenance

The manufacturer admitted, according to the user, that it had not really learned to cope with the implications of real-time systems and its requirements. It was felt that a new schedule for

maintenance and support would have to be developed, but until then, the user told Computerworld, "Communications have been enormously improved since the audit. We now get response which is significantly better than we used to get, but we still have to wait for someone of any qualification level to arrive."

He felt that this, at least in part, made up for the disastrous results of the audit.

The user also pointed out that the cause for normal downtime, such as miscellaneous equipment failures related to telephones, electrical power, weather, and

human malfunctions, were almost as serious as the hardware failures.

Four and a quarter hours of downtime was experienced over the preceding three months for this type of problem. The user feels that utilities like the telephone company and the power companies must learn to respond more quickly to this type of emergency situation. These hours of lost time can seriously hinder the operation of many customers using the system for on-line processing, he said.

Audit Approaches Hurts

The user pointed out that there is a serious question involving the validity of the "audit" approach to system maintenance. He feels that "Any piece of equipment can be tested and analyzed as a computer should not be tinkered with, even by skilled people, unless it is absolutely necessary."

An Independent Disk Drive Manufacturer Wins Slot on Federal Supply Price List

NEW YORK — The General Services Administration has awarded a contract to MAI Equipment Corp., which enables the company to enter the Federal Supply Price List as an authorized disk supplier, the company said recently.

Drives Cheaper Than IBM's

The drives being offered, the MAI 2301 disks, are produced for MAI by Peripheral Systems Corp., a division of National Semiconductor, and are basically similar to the Memorex 630 drives. The drives are being offered for \$475 a month, significantly less than the \$590 a month price of the equivalent IBM equipment. The 630 disk normally rents for \$600 per month for commercial customers.

The drives are completely compatible with the IBM 2311 for

most models of the IBM 360, the company told Computerworld, and have an average access time of only 50 milliseconds as compared with 75 milliseconds for the IBM unit.

MAI also was recently awarded

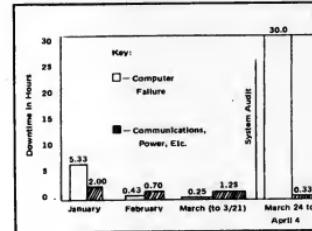
a contract for punched-card equipment from the GSA, the largest order in MAI's history, the company said. The \$3.6 million contract is for the lease, sale, and servicing of punched-card equipment.

Input Conference Planned To Aid Developing Nation

NEW YORK — A conference, "Improving Computer Input," will be held in Montego Bay, Jamaica, April 28 to May 2. Sponsored jointly by Adelphi University, Garden City, N.Y., and Jamaica Industrial Development Corp., the conference will focus upon personnel problems in the computing field, and the role of computer science in a developing nation.

Topics to be discussed include

"Clerical Personnel — Selection and Training," "Professional Personnel — Organization and Management," "Personnel Problems of Computer Network Administration," "Data Processing and Corporate Decision-Making," and "Organization and Administration of Computer Facilities."




COMPUTERWORLD
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Weekly Newsletter — Second Class Postage Paid at Boston, Mass. Published every Wednesday by COMPUTERWORLD, Inc., 60 Austin Street, Newton, Massachusetts 02160. Copyright 1969 by COMPUTERWORLD, Inc. TWX: 715-325-4633. Copyright 1969 by COMPUTERWORLD, Inc.

Alan Taylor, Editor; Robert M. Patterson, News Editor; Evelyn Cowell, Special Supplement Editor; Robert Wilson, National Sales Manager; Michael Hayes, Film Art Services Supervisor; Hale Rachstein, Typesetting Services Supervisor.

Patrick J. McGovern, Publisher; W. Walter Boyd, Associate Publisher.

Subscription rates: U.S. and possessions, \$16 for two years; add \$1 per year for Canada; \$3.50 per year for Foreign. Please send all editorial correspondence to COMPUTERWORLD, Inc., 60 Austin St., Newton, Mass. 02160. (617) 223-5466.

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Mouse and Joystick

The mouse, left, and the joystick, both devices for controlling the cursor on Amdahl and similar CRT displays, provide alternate ways of communicating with computers. Moving the mouse around on a flat surface causes the cursor to follow the motions. The buttons allow the user to input cursor position or its vector value. The joystick provides the same control plus buttons for selecting solid line input and dotted line input and for returning cursor control to the computer. Both are products of Computer Displays Inc., Waltham, Mass.

Plug Compatibility Wins Defense Agency Support

(Continued from Page 1)
be qualified but would allow for certification that a peripheral does, in fact, work successfully.

Liquidated Damages

The department also asked the GSA to add independent component companies to the federal supply schedule and to develop a series of standard "liquidated damages" clauses to handle problems of rendering credit for system downtime, etc.

EMR Computer Cuts 6130 Price By Average 16%

MINNEAPOLIS, Minn. — EMR Computer has announced a price reduction for both purchased and leased systems in its Ad-
vance 6130 series.

As a result of economics, a spokesman said, the outright purchase price of 6130 systems has been reduced by an average of 16%. Monthly lease rates have been reduced by approximately 30%, depending on system configuration, he said.

The purchase price of an 8K 6130 processor system now is \$39,000, including memory, serial and memory protection, high-speed arithmetic instructions, and three hardware index registers, he said.

On- or Off-Line Printing Handled Electrostatically

CLEVELAND — An electrostatic printer has been developed for computer terminal use by Clevite Corp.

The Model 4800 can handle alphanumeric and graphics simultaneously at rates up to 4,800 alphanumeric lines per minute, a company spokesman said.

The printer will accept, as input, serial or parallel digital data from computers, magnetic tape, card readers, raster-type CRT display memories, disks and drums, and communication lines, producing chart and graph output, as well as the conventional alphanumeric printouts, he said.

Writing is done by 600 charge-

ing stylus, any or all of which may be addressed in less than 1 msec and caused to write, he said. Graphics on a standard 8-1/2 by 11-in. sheet take the form of 500,000 dot locations.

Typical applications will include transcription of CRT information onto hard copy, the spokesman said, and as replacements for line printers and Teletypes.

The Model 4800 is tentatively priced at \$15,000. OEM-sized lots are initially anticipated, and the company expects to provide interfaces, he said.

The company expects to be able to deliver system production in the fourth quarter, he said. Clevite has offices at 37th and Perkins Streets here.



Clevite 4800 high-speed electrostatic printer

Parking Lot to Be Computerized

NEW YORK — The Port of New York Authority will install a computer in the LaGuardia Airport public parking lots later this year.

The system, which will include a 1700 computer and nine remote terminals at the parking lot exits, will automatically calculate and display the parking fee to the patron and eliminate the vendor was responsible.

Immediate Action

He also said he asked the defense agencies to implement the policy immediately, without waiting for the GSA to prepare the qualification list and the changes to the contracts.

present time-consuming manual calculation by the attendant.

The new system also will automatically gather statistical and accounting data.

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New Datanet System Has Better I/O Volume, Speed

PHOENIX — A new data communications system, the Datanet-355, has been designed to provide improved input/output volume and speed.

The new unit is described as having up to 16K or 32K 18-bit words, all individually addressable. Different word lengths can be mixed and fully packed in storage.

The unit's I/O multiplexer is an input-output to provide distributed processing and is designed to handle up to 16 adapters, with an aggregate data rate of



500,000 accesses per second, according to the company.

A low-speed adapter can support line speeds in the 110-300

bits/sec range, while the high-speed adapter has a range of 75-50,000 bits/sec.

Datanet-355 operates under the General Electric Computer Control Language (Gecos) for I/O control. This is said to provide an interface which eliminates the need for special system programming.

The unit leases for \$4,000 per month, with the price going up as the configuration grows. It is scheduled for mid-1970 shipment.

General Electric Co., Phoenix, Arizona.

2-Million-Bit Disk

A two-million-bit head-per-track disk drive has been designed for core expansion on small computers, as well as buffer memory, and for extension of the capabilities of accounting machines and calculators.

The Model 7064 disk drive has an access time of 16.5 msec. It records at a density of 1,000 bits/in.

Cost per bit is said to be under 3 cents.

Information Storage, Inc., 8260 E. Eight Mile Road, Detroit, Mich. 48234.

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New Products

has been added to System Associates' 2113 data acquisition and control system which is offered for use on the IBM 1130.

The system is said to be suitable for use in fields such as heavy industry, mining, chemicals, pipelines, and plastics.

The SYS-2113-10 CRT displays data on a 10-in. screen more quickly than it can be done on an on-line plotter.

SYS Associates, Inc., 2460 Lemmon Ave., Fort Lee, N.J. 07024.

Typewriter Plotter

A typewriter plotting system has been developed in conjunction with the IBM 1130.

The system consists of a software package plus a Selectric typehead containing 38 special characters in addition to the standard Fortran set. Plotting precision is said to be one-eighth of an inch, both vertical and horizontal, it is claimed.

The software can determine scales and coordinates automatically, or the programmer can determine output format

himself, according to the company.

The system is available now, and a new version is being prepared.

TPILOT Corp., 55 Mitchell Blvd., San Rafael, Calif. 94903.

High-Speed Buffer

Users of the Varian 6201 computer are offered the company's new 6.20/1-21 high-speed buffer system, which is said nearly to triple the computer's I/O capabilities.

The new unit consists of one or more 16-page memory banks, plus a control unit that allows direct access either by the computer or by high-speed peripheral devices.

The buffer system is designed to allow the 6.20/1 to transfer up to 770,000 Hz, without cycle-stealing or program interrupt.

Applications will include process control, displays, data acquisition, or any use that involves high speed and volume data transfer.

The buffer can have memory from 4K to 16K 16- or 32-bit words; in combination with dedicated computer memory, a 620/1 can use up to 20K total system memory.

Varian Data Machine, 2722 Michelson Drive, Irvine, Calif. 92664.

Digital Date Acquisition

A new system for data and digitized signal acquisition and control has been developed for a number of scientific purposes. Named Adac, the 2016 series acquires low- and/or high-level analog signals, and is said to enable the input of on-line data such as sensors and producing digitized computer-compatible output.

The basic system consists of an analog input section, and intercoupler, a small general-purpose computer, and an ASR-33 teletypewriter. It costs under \$30,000.

Astrodata, Inc., P.O. Box 3003, 240 E. Palis Rd., Anaheim, Calif. 92803.

Modified Teletype

A portable modified Model 33 Teletype and acoustic terminal has been announced that can be easily rolled up and down.

Options include paper tape I/O, with or without automatic carriage return, or incorporate or built-in acoustic data set with originate or originate/answer mode, maintains the company.

Price is \$1,475 (\$52 per month) singly, or \$1,095 (\$38 in quantity).



ComData, Inc., 7544 W. Oakton St., Niles, Ill. 60648.

Low-Cost Modem

A small, low-cost modem, the TT-103 data set, is described as a low-cost modem that transmits and receives at 300 bits/sec.

The company says that it is possible to package the modem in a single card measuring about 4 1/2" by 10 in.

The unit is said to provide full-duplex data transmission over telephone lines and is compatible with the Bell 103, according to the company.

Cost is \$200 in small-quantity lots, scaled down for large quantities.

Tel-Tech Corp., 9170 Brookville Road, Silver Spring, Md. 20910.

Minimized Calculator

A miniaturized calculator has been announced by the American subsidiary of Hayakawa Electric Co., Ltd. The unit is designed for American use, it is



measures 9 1/2" by 9 1/2" by 1/2 in. and weighs 3 1/8 lb., according to the company.

While silent, it can add, subtract, multiply, divide, and perform mixed calculations. It also features a true credit balance, the company claims.

Sharp Electronics Corp., Carterstadt, N.J.

GE-225, 301, 1004, 1107 FOR SALE

IPS has several non-IBM systems for sale. Included are a GE-225 8K tape system, CDC 3100 16K tape/card/printer system, H-200 8K 3-tape system, RCA 30 20K tape system, a Univac 1004-1, and a Univac 1107 65K tape system. Most computers have card and printer I/O. We are looking for an RCA 301 40K tape system and a large H-200 tape system. For prices, delivery, and details, please write or call.

IPS

INFORMATION PROCESSING SYSTEMS, INC.

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Editorials

ACM and the Afips Contract

Two months ago we asked the officers of the ACM to explain why they unhesitatingly ratified the new Afips constitution without debating or explaining its financial implications at a time when, unknown to either the ACM Council or the membership, the society was essentially broke.

Since then this subject has been dealt with by the president of the ACM, by Richard Canning who represents the ACM at Afips, and by Walter Hoffman who, at the time, was treasurer of both the ACM and Afips. We have considered all these answers carefully.

Naturally they differ somewhat. Hoffman stated that Afips could distribute all its income to its member societies if it wished, but more realistically, Galler said that there most likely would now be a number of new Afips activities.

However, some things were similar in all the answers. One was a lack of any figures. How one can consider the financial implications of a question without using figures is not obvious.

Another thing that was common was a lack of any explanation for the apparent haste with which the ratification was put through.

And a third similarity was a lack of any consideration of whether the officials might themselves be involved in a conflict of interest because of their positions within both the ACM and Afips.

In the meantime, we discovered that Simulation Councils Inc., one of the other two members of Afips which ratified the agreement, had borrowed \$15,000 from Afips, and we realized the generally unsatisfactory condition of the books of both ACM and Afips. Under the circumstances, we feel that there is a need for a full investigation. The present data must be considered unsatisfactory and Computerworld now calls for the ACM Council to act at its next meeting to see that a full explanation is provided to the membership — provided frankly and without undue delay.

Compatibility and Design

The action of the Department of Defense in supporting the use of plug-to-plug compatibility devices is to be welcomed. It is clearly absurd in this day and age to restrict users to any one manufacturer for all the devices connected to their computers, or to believe that the industry's engineering standards are so poor that it is not practical to interconnect devices supplied from more than one source.

It also is encouraging to note that the department does recognize that this means the end of the wet-nursing period is here. A vendor reasonably can be expected to take responsibility for only his own devices. Therefore total system responsibility must lie with the user in such cases.

However, it follows that a vendor should expect this and design his devices so that a user can take this new responsibility. This is probably the rub of the situation. If the available devices do not include, or include only at an extortionate price, the necessary means to allow a user to take this responsibility, then the freedom of the user is nullified just as effectively as if he were being forbidden to interconnect at all.



"Maybe I'm in the Wrong Business."

Research Report

Cobol Package Permits Use Of Shorthand, Pre-Auditing

Peter L. Briggs
CW Staff Writer

Called Magic, a new package for Cobol users has been developed to eliminate much of shorthand notation, to enforce the use of standards, and to permit auditing of programs prior to compilation. The package is produced by Information Management Inc., of San Francisco.

Shorthand for Faster Coding.

Using the feature of this pre-compiler called the Control Division, it is possible to use symbols for words used in the Data Division. It also provides abbreviations for all reserved words in Cobol longer than four letters. One user of Magic told *Computerworld* that the time savings were great enough so that the company had cut its downtime in half. Magic runs on Magic. Every program written in Cobol has to be processed through Magic until a clean precompile-run occurs, he said.

It is possible to code only a few lines of Cobol (for example) and from this to produce a fully formatted Cobol source program which has been edited for syntax errors and has expanded all coding into a standard form.

Standards Enforcement

In installations where the desire is to use only one "standard" Cobol, the user can specify any words which should be either flagged for warning or completely prohibited. When a source program is run through Magic, these selected conditions are tested and the errors indicated. If the prohibit option is used, then a "S" is placed next to the erroneous line.

Auditing Capabilities

Suppose an installation desires to prohibit certain options of Cobol, such as the VARYING

option. Upon request from a user, the developer will alter certain sections of Magic and attach a file to the computer directly, so that no program can be run through the compiler without passing through the audit routine of Magic. This would permit installations with several computers to keep control of any violation of these standards, but without human checking.

The package runs on any IBM/360 with 32K or greater, under either TSO or OS. It can be used through the cataloged procedure library under OS to simplify the operation. If a return-code was passed from Magic indicating that errors had occurred, the compilation step would be aborted, thus saving machine time and improving turnaround.

Solomon L. Pollock, company

vice-president, pointed out that many users might not need these auditing features, but that each user would, sooner or later, face the problem of conversion to another system or massive maintenance of a programming system. When this situation arises, he said, Magic would be able to keep control of all phases, without effort on the part of management. Conversion can be greatly simplified, when there is a monitoring program to keep track of what is being done. Following.

The package has a price of \$8,000, which includes the programs, manuals, and a year's maintenance. Possible alterations for attaching Magic to a computer would be extra.

The company has offices in San Francisco at 447 Battery St. and in New York at 11 W. 42nd St.

Input to Magic:

```
PROC
SI SECT
ENTRY 'TEST' USIN LINKDATA,
IF S-W GR 6 NEXT ELSE GO FLY-KITE.
```

Output from Magic:

```
001500 PROCEDURE DIVISION.
001510 S1 SECTION.
001520   ENTER LINKAGE.
001530   ENTRY 'TEST' USING LINKDATA.
001540   ENTER COBOL.
001550   IF S-W GREATER THAN 6
001560     NEXT SENTENCE.
001570   ELSE
001580     GO TO FLY-KITE.
```

This example shows Magic's ability to expand predefined coding into an entire sequence of instructions in Cobol. The use of the ENTRY verb triggers the inclusion of the ENTER LINKAGE and ENTER COBOL statements.

The Generation Gap — Part 1

Have the Burroughs 500s Bridged The Programmer's Generation Gap?

The Burroughs 500 series is an unusual one. The first 500 was an announcement in 1954, and the B5000. This was later rechristened the B5500 when its memory speed was increased. The Burroughs 2500 and 3500 came out last year and the 6500 is due for release in early 1970. It is an unusual time spread for any computer family, and therefore brings up the question: Have the Burroughs 500s somehow managed to bridge the generation gap?

The problem of the generation gap is not unique to Burroughs. Computer generations have often been described in hardware terms. The first generation has been characterized by vacuum

tubes, the second generation by transistors, and the third generation by integrated logic. These are valid concepts from the point of view of the engineer. From the point of view of the programmer, however, the particular characteristics of specific generations, but in how to move from one generation to another.

Reprogramming Needs

The move from the first to the second generation was bad enough. The amount of reprogramming required was enormous. The users in 1960. But the problems of moving from the second generation to the third generation shook the industry. Sometimes it took years to manage the transfer. Budgets were

hopelessly broken. Almost every month during the conversion period new and unexpected problems occurred. So the problem of bridging the generation gap is one that is familiar to many CW readers.

B5500 Still Needs

The Burroughs 5500 system is also becoming more and more familiar to CW readers. This winter we carried a story from one user on the advantages he found in operating on the B5500. He pointed to the lack of job control cards, and to the ease of communication and debugging. Shortly after this, a news item was printed which discussed the intensity of the 360/67 to use more than one operating system

in its virtual memory, thereby allowing people from a terminal to determine under which of the many versions of the 360 operating system they wanted to run their program. CW immediately received many letters from readers pointing out that this was nothing new. "Our B5500 has been doing it for months!" they said.

We found these letters very interesting because they represented an outpouring of loyalty from users of one of the oldest systems, a loyalty which in its intensity of feeling was unique in our experience.

These users had no fears of future incompatibility. They were obviously sold on the systems — and it is a fact that the B5500 is still in new production status, while many IBM 360s dropped out of that state last year!

How It Was Done

These two factors then led us to suspect that somehow, from the point of view of the programmers, the B5500 had indeed conquered the generation gap.

To see how this appears to have been done, we have to go back to the beginning of the systems.

The first of the 500s, the B500, is an unusual system from the programmer's point of view. It is based on high-level languages, on Algol, Fortran, and Cobol to be precise, rather than on a machine language assembly language. From the very beginning, Burroughs has made it clear that any user of machine language could not expect support when the operating system changed. Few users, after the first few exposures, The Burroughs systems have always had an operating system; it was one of the design elements. The main one is called the Master Control Program or MCP for short. It takes over management in the user's problem program, written in high-level language and compiles it, stores it, and executes it as needed.

MCP's Role

The key point is that the MCP makes all the nitty-gritty decisions about how to store working areas, what sort of code should be produced, how tape labels should be checked, etc., by itself. As an example, Burroughs' concern: he is interested only in the functions that the program performs and in whether he has asked for them correctly.

Characteristics Changeable

As a result of this characteristic, through the years Burroughs has been able to change totally the way programs are written at machine level without involving the original program writer. There have been three very major changes in the way programs are written.

At one time, for instance, it was decided that considerable efficiency could be gained if the programs were made "re-

entrant." This involves a technique of programming which insures that no modification is made to a program while it is being executed. As a result, it is not necessary to store a program on a disk if it is bunched during execution by a higher-priority program. Accordingly, the MCP was never part of the MCP, and new versions of the computers, which created re-entrant programs. Burroughs then distributed this new version to its users who just recomplied and again had their old programs running. This is a good example of how you can now take advantage of without any re-writing consideration.

Programmers Were Not Involved

This was possible because none of the user programmers was involved in worrying about the space requirements of the MCP or the re-entrant characteristics, nor were there any machine-level language programs around with incompatible references.

Repeated Cases

And this wasn't the only case. Communications capabilities were added by the same method. What was happening was that user programs were being "jacked up" and a new operating system with updated references was being signed in underneath them. The latest change of this type was the addition of time-sharing capability, again without involving the user programs. The programs that had been written originally were still running, though they could run in time-shared mode.

User Reaction

Naturally the users were delighted with the CW report when it talked to them. They found themselves being painlessly updated without having to reprogram and without having sudden incompatibilities appearing in files. They were not having to learn new job control languages, so they were able to look forward to conversions with confidence. There is no doubt whatsoever that they believe that Burroughs has bridged the gap between the different generations of programs and that we must rejoice in it. It should not now bridge the generation gap between different generations of systems.

Doubts Still Exist

However, there are still some doubts on the outside. Some wonder if this is all that nothing is won without cost and wonder whether or not the costs are worth it. In particular they wonder why, if the Burroughs system is so outstanding, the other manufacturers have not copied it in the years that have gone by since 1961.

We will consider the cost next week and the reasons why perhaps some of the other manufacturers have not yet copied the B5500.

Letters to the Editor

Designer Denies Vote System Can Be Subverted 120 Ways

It was with great interest that we read your article concerning IBM and its discontinuance of vote tabulation activity [CW, March 19]. Several statements were made concerning the validity and/or accuracy of the Votomatic System generally, and the Los Angeles system in particular. Because we designed, created, and maintained the software used in both the city and county of Los Angeles, and because we are proud of the results of our work, we feel it incumbent upon us to take issue with some of the charges contained in said article.

Bear in mind, if you will, that we are considering only that part of the system concerned with the actual use of the computer.

There are three distinct areas where any data manipulation of a nefarious nature could be attempted:

1. Ballots entering the system.

2. Internals between programs.

3. During the tabulation.

First, the ballot as it enters the system is most vulnerable to hanky-panky. But this is true of any type ballot, and any would-be meddler would have to know exactly which column/row positions to punch in order to cause an actual change. Since a single punch obviously cannot be an indication of the particular row or issue, since any additional punches would most likely result in an over-write situation. In addition, due to ballot rotation, any particular column/row punch will not always apply to the same specific ballot title, unless successively called alternately very differently. As the ballots are loaded to tape, they are prechecked and counted. This count is later matched against the precinct poll book, thus disclosing if more ballots were read in than there were people voting.

In the second stage, between programs, the ballots are stored on tape. These tapes are reported from their creation to the central computer for processing by uniformed police officers. We maintain that it is manifestly impossible to alter a segment of magnetic tape at the byte level without rendering the entire tape useless; i.e., erasure, etc.

Which brings us to the third possibility, the actual manipulation of the ballot. This is accomplished by a rather large group of sub-programs called together the "Summary Information Program" (SIP). The main functions of this program are: to tabulate and store results by precinct, and to produce, on request, a variety of reports indicating status of the election. With regard to tabulation, the ballots are read from tape, counted again, and then the actual votes are recorded in core. When an entire precinct has been entered, the results are stored on a prefor-

matted disk file. The file must be zero to start and no precinct may be entered twice which insures no tampering with the physical disks themselves. Each file is maintained in such a manner so that review of the current entry need be reprinted. Sip has restart capabilities for such contingencies and can recover from practically any disaster in 10 minutes.

In addition, there are various sequence checks, special check digit tests, etc., which are continually being run throughout the entire process. For obvious reasons we cannot detail them here. But we feel that they safeguard the voter's franchise beyond all other systems now in use and we are quite confident that while our system may not be infallible, these are substantially less than 120 ways to subvert it.

Lance W. Clifford
Peter H. Jaeger

Comtek, Inc.
Portland, Ore.

He Defends IBM's 2361 LCS As Faster Than CW Reported

The announcement of Lockheed's mass memory for 360s and 494s [CW, April 9] is a welcome step forward in large-memory technology. Your article, however, erroneously states the access time of IBM's 2361 LCS unit as 8 microseconds per byte. In reality, LCS access time is model and option dependent. On the Model 60 access time is 4 bytes (effective time of 2 microseconds per byte). On the Models 65 and 75 LCS access time is dependent on interleaving and is either 8 microseconds with access to 8 bytes (effective time of 1 byte per microsecond) or, with interleaving, 4 microseconds effective time with access to 8 bytes (1 byte per 500 nanoseconds). In no case, however, is the access time 1 byte per 8 microseconds as was reported.

Lance H. Vaughan

The phrase "per byte" was erroneously added during a rewrite. Sorry, Ed.

Computerworld welcomes comments from its readers. Preference will be given to letters of 250 words or less. Computerworld reserves the right to edit letters for purposes of clarity and brevity. Letters should be addressed to: Editor, Computerworld, 60 Austin St., Newton, Mass. 02160.

Computer Acts As Laboratory In Secondary School System

HUNTINGTON, N.Y. — Can the computer serve its laboratory school function as a laboratory machine? Students to comprehend concepts presently beyond their grasp, or is it a programmed instructional device?

If early results of a two-year study underway at Suffolk County Community College indicate, the computer can be made to function as a laboratory.

This is the goal of the "Huntington Project," so called because most of the high schools involved are in the town of Huntington.

In the project schools, the computer, either a small PDP-8/I from Digital Equipment Corp. or a terminal to the large time-sharing system operating at Occidental's Cal-Tech Computer, has been made to serve as a modeling device in the study of biology, chemistry, physics, mathematics, and social studies. Since January, teachers have developed more than 80 programs for student use.

Typical of the teachers using

the computer to make concepts tangibly impossible is Mrs. Mae Cort of Walt Whitman High. The school's PDP-8/I has been equipped with a switch, giving Mrs. Cort and her biology class complete control of the computer for a variety of experiments.

The secondary purpose of the National Science Foundation-funded "Huntington Project" is

to determine whether it is better to have a computer on hand, or if one can be purchased in an office, according to Prof. Ludwig Braun of the Polytechnic Institute of Brooklyn at Farmingdale, N.Y., the project's director.

While no final evaluation of this question has been made, one thing is clear to most of the 45 teachers and 1,200 students taking part. More input devices are needed. Both the PDP-8/I and the time-sharing terminals have created so much interest that there is not enough time available for each teacher and student demand.

Of the two approaches, however, the small computer appears to have some very definite advantages. For example, Mrs. Cort found it difficult to gain access to the large system on occasion. The PDP-8/I, with 4,096 words of basic core, costs \$12,000 and 32,768 words of disk storage at \$19,300, less than the price of a time-sharing terminal for two years.

While it does not possess the large variety of programs or the ability to act as a file of student and teacher programs for all schools in the project, the advantage of the small computer is that its purchase price is a capital expenditure. There is no yearly rental involved.

Warren Houth, in charge of the PDP-8/I at Walt Whitman, also pointed out that the Focal conversational computer language available only on the PDP-8/I offers distinct advantages for those with no programming experience.

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New Literature

A series of specialized reports designed to reflect the results of the research and development efforts of the National Computer Council has been initiated.

Titles published to date include: *Computer Courses 68/69*; *Computer Application Practices*; *Computer Video Processing Control*; *Computer in Distribution*; *Computers in Textiles*; and *International Computer Bibliography*.

Reports are available by subscription only. Contact Nancy Bauer, Science Associates, 23 E. 26th St., New York 10010.

A new brochure, *Job Documentation by Col/360* describes the job documentation that users will receive with the control language translator for ICL upon its implementation in IBM's new operating system.

Alma, 14033 Ventura Blvd., Encino, Calif. 91316.

Four new information bulletins describe the use of SCOPLT as a management tool, SCOPLT, 3-D applications software, and the GPCP contouring program.

California Computer Products, Inc., 305 N. Muller St., Anaheim, Calif. 92803.

A new bulletin describes the performance specifications of the Ampex 25DM-500 magnet-

core memory. Request brochure C-099 from Lee Wenfah, Mail Stop 7-14, 401 Broadway, Redwood City, Calif. 94063.

A new brochure describes a new business concept or total systems responsibility with a company.

A detailed, functional flow diagram shows entwining involvement of project management, total system responsibility, and consulting services. Digital Applications, Marketing Services Dept., 366 Third Ave., New York 10022.

A completed description of *Code/Cap*, a conversational computerized program, may be obtained at no cost from Product Information Dept., Comshare Inc., 1919 W. Stadium Blvd., Ann Arbor, Mich. 48106.

Computer Literature Bibliography, Vol. 2 is a continuation of *Computer Literature Bibliography, 1946 to 1963* and contains approximately \$200 references to computer literature published during the years 1964-1967. The bibliography includes the full title and the names of all the authors of each item. Price is \$5.

Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

School Offers Tuition Refund Plan

FAIRFAX, Va. — The National Board of Fairfax, and Computer Age Institute, Fairfax, have developed a tuition loan plan with a liberal refund provision for students accepted by the institute.

This provision permits a student to receive a refund of his tuition commitment amounting to as much as 100%, according to a spokesman at Computer Age Institute.

If the student withdraws before the first day of the course, he receives 100% of the tuition,

including the \$175.00 initial payment and registration fee.

If he withdraws before having completed 10 hours of time, he receives 15%; between 10 hours, 50%; or before 200 hours, 25%.

The student may pay the balance of his tuition over a period of 36 months, and since the courses offered are completed in less than a year, he is able to pay back half of his tuition after being on the job for which he trained.

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Jockey Club Utilizes Computer For Choice Breeding Information

By Joseph Hanlon

LEXINGTON, Ky. — A computer search program on bloodlines and breeding records could benefit the entire thoroughbred racing industry, according to the Jockey Club.

The club, the organization responsible for the registration of thoroughbred race horses in this country, is using an IBM 360/30 to register and compile records on all horses foaled in the United States and Canada since 1927.

The club's purpose is to make records expected to produce more selective breeding results, establish better measures of the actual genetic traits affecting racing ability, provide decision analysis tools for the entire industry, and predict the relative success of untried horses.

An offshoot of the correlation of this data is producing, for the first time, a complete analysis of race horse breeding, performance, and earnings, according to Ray Gillespie, manager of data processing for the club.

"Our major commitment at this point," he said, "is to work closely with club officials in speeding the registration oforoughbreds. However, as a long term project, we are working on a system for rating horses based on their genetic makeup and racing performance."



Racing's most successful sire, Bold Ruler, is shown here with Arthur Hancock of Claiborne Farms. Having sired some 50 stakes winners, his breeding record is of immense interest.

The genetic analysis will be applied to untried horses. The performance of his parents and brothers will be analyzed to predict the chances of success. The feels, what each horse can or cannot do. The club hopes that this will aid racetracks everywhere in setting up races in which the horses have comparable abilities.

In explaining the need for a computer to process the information, Gillespie pointed out that, whereas only 13,257 horses raced in 1940, now some 40,661 horses race. Information about each horse is collected as soon as the horse starts racing and is updated with earnings and records for each race.



A scintiscanner is adjusted over a patient in preparation for making a scan of radioactive isotopes in his thyroid gland.

Computer Techniques Aid In Detection of Cancer

NEW HYDE PARK, N.Y. — Anatomical side-and-seek as doctors applying the techniques of nuclear medicine and computers to the difficult problem of detecting cancerous growths in the human body.

Doctors at Long Island Jewish Hospital here have teamed a Honeywell computer with a scientist to find a way to pinpoint tumors in patients and to pinpoint the locations and size of the growth.

Until recently the physician relied almost exclusively upon his clinician's experience and x-ray machines to find and locate tumors. X-ray technicians photographed the patient as instructed by a radiologist who later

searched the x-ray looking for tell-tale changes in the light and dark areas that might be tumors. Although still extremely useful, this method does not tumor.

The difference in shading in the x-ray picture may

not be sufficient for diagnosis even when enhanced by injection of special contrast materials.

Now under evaluation, a more recent approach uses computers to examine the x-ray since the machine can detect as many as 100 shades of gray. The technique was derived from the military application which uses computers to examine aerial photographs of enemy terrain for troop and equipment concentrations.

Penn Central to Install Quick Reservation System

PHILADELPHIA — Penn Central will install an advanced, computerized system to expedite passenger ticketing and reservations on its new Metroliner high-speed train service between New York and Washington. It is planned to have the new service operational by mid-summer.

Under the new system, a single reservation and ticketing procedure will be completed in approximately 20 seconds. The selection of a seat will re-use it from the inventory.

The equipment was developed by Ticket Reservation Systems, Inc., of New York City. Eventually, Penn Central will expand this ticketing and

reservation system to all trains serving the Washington-New York corridor.

Installation of console-printer units at all ticket windows in New York, Newark, Trenton, Philadelphia, Wilmington, Baltimore, and Washington will proceed as rapidly as the equipment can be obtained and tied in with master computers, a spokesman said.

"All the ticket clerk will have to do is press several buttons on the console," said Robert G. Flannery, vice-president for operations. "If the space on the train desired is available, the machine will immediately print a ticket showing the Metroliner seat number, car designation, train identification, fare, and date. If the ticket is for a coach passenger, the ticket will have an identifying color stripe which replaces the present boarding pass needed to admit passengers to the train."

"At the same time, a teletype beside the console will record the transaction on paper, to be confirmed. The agent also will do the clerk's bookkeeping, showing him at the end of his tour of duty how much money he should have in his cash drawer."

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On the Beam

This experimental light deflector switches a laser beam from one spot to another in 35 millionths of a second. Designed and assembled at the IBM Systems Development Division laboratory in San Jose, Calif., the deflector operates at speeds required in future optical memories.

Thermal Page Printer Serves As Input/Output Terminal

UPPER SADDLE RIVER, N.J. — A thermal page printer designed for use as an input/output terminal has been announced by Computer Transceiver Systems, Inc.

Designated the Execuprint 300, the unit has a 96-character set, including full ASCII, upper/lower case alphabet, and special characters, a company spokesman said.

The unit operates from any location where an ordinary electrical outlet and telephone are available.

In operation, the user will dial-up a remote computer, put the headset in a coupler cradle, and type input from the keyboard. Both input and output



Execuprint 300 terminal printer

spokesman said.

Execuprint is priced at \$3,800 for a single unit, with quantity discounts available, he said.

Production deliveries are to begin in the third quarter.

The company has offices at 123 Pleasant Ave. here.

Used Computer Market Gains Sophistication

NEW YORK — The business of leasing and selling used computer systems is becoming more sophisticated, with companies offering added services to the users.

Typical of this change is IOA Data Corp. which now offers its customers the consulting services of Worldwide Computer Services Inc.

"We are now able to provide our customers with a complete package of hardware and related software," said Stuart Rubenstein, chairman of IOA Data Corp.

It used to be that a user knew exactly what equipment he wanted, an IOA spokesman said. But today the complexities of modern systems often needs help in deciding how to update or revise his installation, and that's where Worldwide comes in, he said.

IOA, with offices at 383 Lafayette St. here, owns 20% of Worldwide, which is the basis for the working relationship, the spokesman said.

Japan Schedules Business Show

TOKYO — Japan's 38th Business Show will open May 23 with an array of computers, business machines, and office products from approximately 200 manufacturers, both Japanese and foreign.

The show, to be held at Tokyo's Harumi Pier exhibition grounds through May 28, is expected to draw close to half a million visitors from all over the world.

According to the Ministry of International Trade and Industry (MITI), Japan's computer production totalled \$455 million last year, up 40% over 1977.

The show is held twice a year, the site changes each year. Last Tokyo in the spring and Osaka in the fall. It is organized by the Nippon Office Management Association and the Tokyo Chamber of Commerce and Industry.

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Real Estate Service Offered

DALLAS — A computerized real estate marketing system which can put realtors, other brokers, investors, lenders, exchanges, buyers, and sellers into immediate contact on a nationwide basis is now available through Associates Inc. AI is using its Dallas data processing center, one of four such centers in northern Texas, where an IBM 360 computer is controlling a telecommunications system.

This system includes Touch-Tone telephones, audio response, Teletypes, and visual displays which come with an optional printer. Any member utilizing the system, the company said, will have access to what will become the largest inventory of real estate listings anywhere in the world.

The system is such that it can handle residential, commercial, industrial, and agricultural property listings. This Realtor Inquiry package was developed by AI's teleprocessing staff for one of its major clients.

System Helps Students To Probe Job Interests

LAS VEGAS, Nev. — The Interactive Occupational Exploration System, an interactive guidance system, was introduced at the American Personnel and Guidance Association convention in Las Vegas. The new system intended to aid students in exploring various occupational interests and will supplement Interactive Learning System's existing Guidance Assistance Programs.

The system is designed for use by the student in the high school guidance office. Applications of the system can be made on the junior high school and junior college levels. Access to the computer data file is by means of a standard teletypewriter located in the guidance office.

The system contains information about thousands of occupations coded from the U.S. Labor Department's *Dictionary of Occupational Titles*, an Interactive spokesman said. The student inputs characteristics which are important to him/her in a job, and the computer responds with a list of occupations having these particular characteristics. Each job is described by 15 categories such as work activities, physical demands, working conditions, earnings, education required, and advancement, he said.

SAN DIEGO, Calif. — Users who are currently interested in, or considering purchasing Simul8s (an assembler for, and simulator of the PDP-8 series computers) can soon obtain the package at reduced prices.

The new price for the package plus documentation and support is \$1,500. On-site training from the developer, Decision Science Inc., is available for \$450 plus air fare.

The package operates on the 360/40 or larger and the CDC 3600.

The company has offices at 4508 Mission Bay Drive here.

Program Edits List Tapes in One Pass

LANHAM, Md. — A program which extracts identified fixed-field name and address computer tape files and isolates items within each field has been introduced by Softpak Inc.

The new program eliminates the need for multiple computer passes in editing tape lists and is particularly useful in tape-to-tape list preparation for producing personalized computer letters, mailing rosters, and photo-composition directives, a Softpak spokesman said.

In the name field, name prefixes, first or middle name, and name suffixes can be extracted, he said. These items can be converted to upper and lower case, and names can be reconstituted properly; or the full word can be inserted via a table look-up process (i.e., the abbreviation Dr. can be spelled out Doctor). Last names with double capital letters such as MCARTHUR can be converted to McArthur and O'DONNELL to O'Donnell, he said.

Input to the system can be in

the form of either card or paper-tape, using batch-control tickets to provide input balancing. The primary report from the system is called the Consumer Credit Reference Listing, which contains current balances, payoff amounts, and other pertinent information regarding each account, the spokesman said.

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Price of the package is \$15,000, which includes manual, operating instructions, installation manuals, and training guides.

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Utility Company Package Handles Billing, Accounting

ORLANDO, Fla. — A new billing and accounting service package is being developed by Florida Computer Systems Co. to create a complete package for billing, accounts receivable, frequent accounts handling, and the other functions related to the operations of utility companies.

Called Fabo (Florida utility billing system), the system is designed to serve the needs of over 300 utilities in the state as

well as those of Florida Gas Co. "We've incorporated the best techniques learned at Florida Gas Co. with those from leading companies all over the nation," says Ed Skar, president and manager, "to develop the nation's first modern computer system that will effectively cross all utility industry lines."

System Functions

Functions of the system include delinquent notices sent automatically to late-paying customers, and automatic credit rating procedures that evaluates customer's bill history and payment history (which reportedly could drastically slash bad-debt write-offs), and management reports which show up to 14 month's history for each utility customer, he said. The system also performs periodic regular meter reading processing, regular posting of cash payments, delinquency analysis, merchandise and lease accounting, gross and netting, automatic accounting journal entries, and even bill analysis reports for rate-study purposes.

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	56	60		

IBM Preparing a Better Version Of PL/I F-Level OS/360 Compiler

WHITE PLAINS, N.Y. — Major improvements to IBM's PL/I F-level compiler for OS/360 have been announced.

Version 5 of PL/I (F), scheduled to be available in the first quarter of next year, will include the following improvements:

- Faster execution speed for selected programs through more efficient generated code and the use of optional loop and subscript optimization phases.
- Language extensions and

other new options which make available to the PL/I user many of the message-processing facilities of the OS/360 Queued Telecommunications Access Method (QTAM).

• Expanded data handling functions facilitating data conversion, validation, and input editing.

• Reductions in storage requirements for two-byte binary data through the use of the half-word binary capabilities of System/360.

Typesetting Language Is Developed

CW Staff Writer

NEW YORK — A new computer language called Page I that the company expects will have the same effect upon the use of computers in the graphic arts industry as high-level languages such as Fortran and Cobol had on science and business, is available now from RCA's Graphic Systems Division.

Page I allows graphic arts per-

sonnel unskilled in computer programming, and programmers with a rudimentary knowledge of typesetting, to tell a computer exactly how to handle all aspects of composition, the composition of type, the placement of words and characters, and the use of code words marked on the original manuscript defines font sizes, justification, hyphenation, pagination, footnotes, and captions.

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April 23, 1969

Page 21



Table-sized remote terminal will be used for financial OTC analysis.

OTC Data Bank Available From Standard & Poor's

NEWS YORK — Standard & Poor's Corp., unveiled before recently held annual meetings of its 1,000 members, a new computer-readable data bank which, for the first time, enables the financial performance of companies whose stocks are sold on the computer to be analyzed as easily as those listed on the New York, American, and regional stock exchanges.

Use of the OTC data bank is not restricted to the large enough companies whose stockholders are now using the service, since Standard & Poor's will lease the bank to time-sharing service organizations around the country.

The data, which is contained on magnetic tape, provides detailed financial information for each year of a company's operation dating back to 1963, or year of inception if later. It includes annual income statement and balance sheet statements collected from annual reports, SEC reports and, in many cases, from direct correspondence with corporate officials.

Much of it, claims the company, is not readily available anywhere else.

Where necessary, figures have been adjusted for comparability in accordance with accounting definitions developed exclusively for this purpose.

Results are displayed which resemble a television screen with an attached keyboard, and which are connected to a centrally located computer via a telephone line, permitting users to request data and see replies appear on the screen before them, according to the company.

The initial version of the data bank contains data on 500 of the more active traded OTC stocks. By June of this year the number of companies will be expanded to 1,000, and by the end of 1969 a total of at least 1,500 companies will be included.

Along with S&P's daily price tapes, the OTC data bank will enable analysts to perform up-to-the-minute, in-depth analysis of practically any nature.

The new OTC data file represents the newest category in Standard & Poor's computerized financial data bank service which is known commercially as Compustat. In addition to the first increment of OTCs, the Compustat inventory now consists of data on the stocks of over 2,500 companies, including all industries on the New York and American Stock Exchanges, 100 utilities, over 200 insurance companies, and 500 Canadian companies.

Currently in the process of development is still another new category covering banks, savings and loan companies, management firms, mutual funds, and mutual fund management companies.

Mohawk Data Sciences, Photon Disclose Agreement in Principle

BOSTON — Mohawk Data Sciences Corp. and Photon, Inc. have announced that an agreement has been reached "in principle" to combine the businesses of both companies.

The proposed merger would give stockholders of Mohawk one share of the "continuing company" for each share of stock previously held, and stockholders of Photon would get 0.4 share of the continuing company for each share of Photon.

The merger is contingent upon the satisfactory resolution of legal, financial, and administrative details and the preparation of the definitive merger agreement which will be submitted at a later date for approval by both boards of directors and the shareholders of each company.

The proposed merger is expected to qualify as a tax-free exchange for federal income tax purposes, although it has not yet been decided if a tax ruling will be sought, according to the companies.

The proposed merger is expected to qualify as a tax-free exchange for federal income tax purposes, although it has not yet been decided if a tax ruling will be sought, according to the companies.

Although company officials have not said which company would be the surviving company, it is believed that the company will be called Mohawk Photon, Inc.

"By taking advantage of common facilities, jointly developing

new projects, supplementing MDS's large field-support network with Photon specialists, expanding the rental program of MDS with Photon systems, and combining MDS's extensive telecommunications, data collection, and media conversion equipment with Photon computer and key-driven phototypesetting systems, the merged organization will have some of the broadest lines of auxiliary data processing equipment and marketing support ser-

vices offered by any independent manufacturer in our industry.

"The benefits accruing to such an enterprise, which would represent a force in the data marketplace both here and abroad, could be substantial."

Photon, Inc., traded over-the-counter, manufactures and sells phototypesetting equipment to the printing, publishing, data processing, and graphic arts indus-

tries.

Terms Announced Between Honeywell and Collins

MINNEAPOLIS, Minn. — Honeywell Inc. and Collins Radio Co. have announced the proposal through Honeywell would acquire Collins.

In joint statement by James H. Thompson, Honeywell chairman and Arthur A. Collins, president and chairman of Collins, propose the acquisition "of the basis of \$6/100 of one share of common stock of Honeywell for each of the outstanding 2,967,427 shares of Collins common stock."

At recent stock prices, the value of this proposal is in excess of \$20 million. The two companies also indicated that "consummation of the transaction will be subject, among other things, to the approval of the terms by the board of directors of both corporations

and to necessary director and stockholder approval of a definitive agreement." There is a possibility that approval by Honeywell shareholders wouldn't be needed.

Collins is presently fighting a proposed takeover by Electronic Data Systems that Collins terms "hostile to the interest of the company."

In fiscal 1968, ended last July 28, Collins had revenues of \$13.3 million, or \$4.44 a share, on sales of \$447 million, up from \$12.1 million, or \$4.42 a share on sales of \$438 million in fiscal 1967.

In comparison, in all of 1968, Honeywell had a net income of \$50.5 million, or \$3.41 a share, on sales of \$1.28 billion, up from \$42.3 million, or \$2.85 a share, on sales of \$1.05 billion in 1967.

RCA Report Emphasizes Computers

RCA sales and earnings in the first quarter of 1969 advanced to new all-time highs, continuing the pattern of growth that has produced record results in each of the past four years, according to Robert W. Sarnoff, president and chief executive officer. The RCA chief executive has promised for the future in various aspects of the company's business, particularly with particular emphasis on advances in the computer area.

He said domestic computer revenues in the first quarter were up 43% over a year ago, and are now well ahead of the industry in terms of computer growth," Sarnoff said. "In the last three years, our domestic computer shipments have increased 120% in dollar value, compared to an industry gain of 58%.

"We believe we are in the vanguard of new computer technology, with our primary effort concentrated in the growth areas of computer communications and data processing. We are taking aim at second place in overall industry ranking, and we hope to attain it in the foreseeable future," Sarnoff said.

Net profit was \$40.8 million, an increase of 5% over the previous first quarter record of \$38.7 million in 1968. Earnings per share were 63 cents, up from 60 cents in the same period last year.

For the first quarter were \$769.9 million, an increase of \$1.7 million over the same period a year earlier. The previous quarterly record of \$768.5 million was established in 1967.

"A softening in certain areas of the economy is becoming apparent," Sarnoff said, "and this places a greater premium than ever on management's ability to keep a tight rein on costs, to continue cost inventories, and other variables in the manufacturing process. We are cautiously optimistic about the economy's continued advance, but we intend to keep our guard up in the months ahead."

Bothe Reports Record First Quarter Revenues

SAN FRANCISCO — Bothe Computer Corp. reported record first quarter revenues and earnings at the annual stockholders meeting on April 8.

In announcing the record quarter, D.P. Boothe, Jr., chairman, stated that the company now has \$180 million committed to computer systems in the United States, Canada, and Europe.

Revenues reached an all-time high of \$9,033,686 and earnings were \$711,700, or 43 cents per share, on 1,666,117 outstanding

shares for the first quarter ending March 31.

The company, with revenues of \$14.4, 43.5, and earnings of \$176,937, or 14 cents per share, on 1,270,000 outstanding shares for the same period a year ago. (Actual earnings were \$84.216, or 7 cents per share, before a 1967 tax loss carry-forward was utilized.)

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Optical Scanning, Up 25%, Leads In Otherwise Uneventful Market

By A.B. Williams
CW Staff writer

During the week ended April 11, only one of Computerworld's five sectors showed any noteworthy change. A 15-point (25%) rise in Optical Scanning by itself had a major effect on the Peripherals group. Also featured were Alphanumeric, up 4-1/2 (11.4%) and Computer Equipment, up 1-3/8 (11.2%). Overall, the Composite index was up 1%, slightly better than the Dow Jones industrial average.

age, which advanced 6.16 points (0.64%). During the last four months, the general pressure on stock prices has been felt by computer stocks, with Computer Systems, both as a group and as individual issues, acting the least unfavorably. Net percentage changes be-

The hardest-hit group has been Leasing, which has seen seven issues drop below the March 1, 1968, base prices.

The group itself has gone from an index of 134.0 on Nov. 30 to 102.1 (barely over break-even) on April 11, despite the starring role played by Leasco Data. While down some from its high, Leasco still shows a hefty 114.2 gain from base.

In the leasing group, only

Levin-Townsend Computer

made a substantial gain over the week. up 6-7/8 (18.3%) to

During the week under review, the Software sector was unusually stable, reflecting only two changes of over 10%, with

Computing & Software up 10.8% and NCA up 14.3%. Off the index, Matrix was down 2 (22.2%) to 7. The range and pattern of action in this issue reflect the great excitement available to the impatient in-

vestor.

Among more recent issues, Viatron stock has had a rather exciting short life. From an underwriting at 15, it has gone at least to 36 bid, and closed on April 11 at 22, after going as low

Vistron has been in the news recently. The company has agreed to acquire Photics Research Corp., of Montgomeryville, Pa.

Photics, which had an operating loss of \$97,010 on sales of \$727,609 in the year ended June

Photronics International, Inc., a subsidiary of Photronics, Inc., reported revenues of \$727,609 in the year ended June 29, 1968, makes photographic masks used in the design and manufacture of integrated and MOS circuitry.

Viatron also appears to be having problems with production. According to *Business Automation News Report*, deliveries

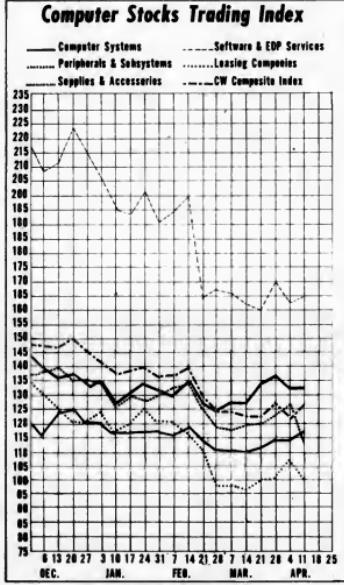
originally scheduled to have started this summer may slip to the end of the year.

Their low rental price (\$39 per month for the basic System 21) is said to be dependent upon state-of-the-art components for which Viatron appears not to have yet signed a supply contract, according to the News Report. However, a source close to Viatron told Computerworld that contracts have been made and material is slowly arriving.

The Big Picture

Among recent stock commentaries there has been a large amount of indecision, amounting almost to outright disagreement, both over the near-term market outlook, and over the attractiveness of individual issues. Although some of this can be attributed to the difference between long- and short-range goals, the only subject of agreement is the long-term view of the market as a whole, and what effect inflation must have.

It would appear that many issues, including some of those in *Computerworld's* tables, must be regarded as short-term, basically trading-type securities.



BASE FOR EACH TRADING INDEX: 100 as of 3/1/86

COMPUTER STOCKS: TRADING SUMMARY

WEEK ENDED APRIL 11, 1941

PERIPHERALS & SUBSYSTEMS				WREN	NET	NET
EXCH	1949	CLOSING	PRICE		NET	NET
	RANGE				CHANGE	CHANGE
O	75- 75	1/3 7/4	AGROGRAPHIC-HOLT	8	3/4	-1/4
O	45- 45	35 44	AMPEX CORP	5	1/4	-1/4
O	19- 19	17 3/4	BLITZ-SEARHAN & NEW	3/4	4/4	-1/4
O	35- 35	31 1/2	CALCOMP	1	1/2	-3/4
O	12- 12	15 5/4	COMPUTER ELECTRONICS	1	1/2	-1/2
O	80- 80	18 18	DATA SYSTEMS CORP	1	1/2	-1/2
O	60- 67	54 1/8	ELECTRON MEMORIES	1	1/2	-1/2
O	57- 57	54 1/4	FARNENBERG MFG	1	1/4	-3/5
O	57- 59	54	FARNENBERG MFG	1	1/4	-3/5
A	34- 34	26 2/4	MILITARY ELECTRONICS	1	1/2	-1/2
A	70- 70	29 7/1	OPTICAL SCANNING	1	1/2	-1/2
O	98- 98	65 3/4	PTC INC	1	1/4	-9/4
O	98- 98	65 3/4	RECOGNITION EQUIPMENT	1	1/4	-9/4
O	71- 65	48	RECOGNITION EQUIP	1	1/4	-9/4
N	60- 60	45 3/4	SANDERS ASSOCIATES	1	1/2	-1/2
O	85- 85	62 1/2	TALON CORP.	1	1/2	-1/2
N	270-247	247 5/4	XEROX CORP	4	1/4	-1/4

SUPPLIES & ACCESSORIES				
EXCH	1949 CLOSING PRICE	ITEM NET WEEK CHANGE		
		ITEM	NET	WEEK
O	37- 37 19 5	AODH VISIBLE	+ 4	1/8
O	87- 83 63 1/4	ADAMS-HILL CORP.	+ 4	5/8
O	87- 83 63 1/4	BALTIMORE INDUS. CO.	+ 3	-3/4
O	44- 35 37 1/4	DATA DOCUMENTS	+ 3/4	-1/4
R	40- 27 21 4	ENVIS BUS. FORMS	+ 3	2 1/2
M	184- 182 180 1/2	100 COMPANY	+ 1 1/2	1 1/2
M	184- 182 180 1/2	AMERICAN STAINLESS	+ 1 1/2	1 1/2
M	44- 37 38 1/2	KARSHU CORP.	+ 1	1/2
O	43- 48 44 4	REYNOLDS & REYNOLD	- 4	-8 1/2
O	32- 29 29 1/2	ROBERTSON REEDER	+ 1	1/2
O	29- 29 29 1/2	URCO	+ 1	1/2
A	29- 16 14 1/2	WALES MAGNETICS	+ 1	1/2
S	31- 29 23 1/4	WALLACE BUS FORMS	+ 1	1/2

SOFTWARE & EDP SERVICES				WED	WEF	WEE
EXCH	1949 RANGE	CLOSING PRICE	CHANGE PERCENTAGE	WEEKLY VOLUME	WEEKLY VOLUME	WEEKLY VOLUME
A	34- 35 1/2	4 1/2	ADVANCED COMP TECH	3 1/4	-7.5%	
A	34- 35 1/2	4 1/2	APPLIED DATA SYSTEMS	3 1/4	-1.8%	
A	15- 16 1/2	15 1/2	AUTOMATIC DATA PROC.	3 1/4	+1.8%	
A	18- 19 1/2	9 3/4	AUT SCIENCES	3 1/4	+1.8%	
A	22- 23 1/2	22 1/2	BEST COMPUTER CORP.	4	+1.8%	
A	22- 16 1/2	16 1/2	COMPUTER ANALYTICS	4	+1.8%	
A	22- 16 1/2	16 1/2	COMPUTER NETWORK	4	+1.8%	
A	47- 54 40	40	COMPUTER SYSTEMS	4	+1.8%	
A	52- 53 15	53	COMPUTER USE	1 1/2	-3.3%	
A	92- 95 46	46	COMPUTING & SOFT.	1 1/2	-3.3%	
A	10- 11 1/2	11 1/2	DATA CENTER SERVICE	1 1/2	-3.3%	
A	17-11 1/4	14	DATAFILE	1 1/2	-3.3%	
A	10- 11 1/4	11 1/4	DATASTREAM	1 1/2	-3.3%	
A	38- 39 21 1/2	31 1/2	ELECT COMP PROF.	3 1/2	-10.3%	
A	28- 29 1/2	29 1/2	ELLECTRONIC DATA	3 1/2	-10.3%	
A	28- 29 1/2	29 1/2	MATRIX CORP.	3 1/2	-10.3%	
A	29- 30 1/2	30 1/2	PROGRAMMING SYSTEMS	3 1/2	-10.3%	
A	24- 24 1/2	24 1/2	PROGRAMMING RESEARCH	3 1/2	-10.3%	
A	11- 11 9/16	9 1/2	PROGRAMMING SYS	1 1/2	-10.3%	
A	11- 11 9/16	9 1/2	STRATEGIC SYS	1 1/2	-10.3%	
A	37-37 1/2	17	SYNTHETIC DATA	1 1/2	-10.3%	
A	15- 16 5/8	9	UNITED DATA CENTER	3 1/4	+9.1%	
A	28- 29 1/2	29 1/2	UNIVERSAL DATA INC.	3 1/2	-10.3%	
A	28- 29 1/2	29 1/2	UZY SYSTEMS	3 1/2	-10.3%	

LEASING COMPANIES				WEEK	WEEK	
EXCH	1949	CLOSING	OPENING	CHANGE	CHANGE	
O	16- 8	37 1/8	36 5/8	RODITE COMPUTER	1 3/4	-4 1/2
O	16- 8	18 1/8	18 1/2	COMPUTER EXCHANGE	1 3/4	-4 1/2
O	14- 8	18 1/2	18 1/2	DATA SYSTEMS	1 3/4	-4 1/2
O	14- 8	18 1/2	18 1/2	CONT'N COMPUTER	1 3/4	-4 1/2
O	15- 8	18 3/4	18 1/2	EVANS-TRONICS	1 3/4	-5 1/2
O	15- 8	18 1/2	18 1/2	GENERAL BUSINESS & S.	1 3/4	-4 1/2
O	11- 8	18 1/2	18 1/2	DATRONIC RENTAL	1 3/4	-4 1/2
O	11- 8	18 1/2	18 1/2	DATA SYSTEMS	1 3/4	-4 1/2
O	11- 8	18 1/2	18 1/2	GAIC INC.	1 3/4	-4 1/2
O	45- 8	31 21/32	31 1/2	GRANITE ENTERPRISES	1 3/4	-4 1/2
O	13- 8	56 46/48	56 46/48	LEASCO DATA PROC.	1 3/4	-3 1/2
O	13- 8	56 46/48	56 46/48	LEASCO SYSTEMS	1 3/4	-3 1/2
O	57- 8	47 44/48	47 44/48	LEWHIN-TOMSON CHP	1 3/4	-3 1/2
O	18- 8	5 3/24	5 3/24	LHC DATA INC.	1 3/4	-5 1/2
O	18- 8	5 3/24	5 3/24	MINI-COMPUTERS	1 3/4	-5 1/2
O	39- 8	31 1/16	31 1/16	NATIONAL EQUIPMENT	1 3/4	-25
O	10- 8	6 8/16	6 8/16	NCI LEASING	1 3/4	-25
O	10- 8	6 8/16	6 8/16	NCI LEASING	1 3/4	-25
O	34- 8	22 1/2	22 1/2	SYSTEM CAPITAL	3 1/4	-18 1/2
O	54- 8	21 23/24	21 23/24	S.O. LEASING	7 3/4	-18 1/2

Informatics Buys Rucker Data Centers

SHERMAN OAKS, Calif. — Informatics Inc. has completed the purchase of two computer data centers from The Rucker Co., Oakland, Calif., for \$48,000. shares of Informatics stock with a current value of over \$3 million.

Dr. Walter F. Bauer, president of Informatics, said that the data centers, located in Oakland and Los Angeles, will be combined with a third center in the San Fernando Valley. The three data centers will operate seven medium-scale IBM computers in the three centers.

"Plans are already being made to put the Informatics centers on-line to bring data services into the customer's office," said Bauer.

The Informatics service would be a complete package, he ex-

plained, including systems analysis, programming, computer hardware development and customer personnel training in operations and Marx IV programming.

Bauer said the Rucker data center acquisition is a step toward the establishment of data centers nationwide.

Informatics also has agreed in principal to purchase 70% interest in Dataplan, Inc., New York-based subsidiary of Interpublic Group of Companies, for \$1.6 million cash.

Honeywell Receives U.S. Job-Training Grant

WELLESLEY HILLS, Mass. — Honeywell's Computer and Data Processing Division has received a two-year, \$396,000 grant from the U.S. Department of Labor to train 130 persons in computer

production work.

Thomas R. Lawrence, a manpower resources specialist for Honeywell EDP who will head the program, said training will begin in June at the division's facility on Soldiers Field Road in the Brighton section of Boston.

The first class will comprise approximately 26 persons. Students, both men and women, will receive 13 weeks of orientation and skills training at the division's facility before going to an EDP production line for on-the-job training.

Lawrence said the students will receive training in such jobs as handling computer packages and building printed-circuit boards, and some of the students will be assigned as production line inspectors.

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Earnings Reports

BOOTHE COMPUTER CORP.

3 Months Ended March 31

Revenue	\$9,033,686
Earnings	711,000
Shr Ernd	.43

*Restated to reflect the acquisition of Micro Dyno Instruments, Inc.

1968

Revenue \$14,454,353

Earnings 1,786,000

Shr Ernd .07

COMPUTEST CORP.

9 Months Ended Feb. 28

1969

Revenue \$14,558,436

Earnings 276,795

Shr Ernd .30

*Restated to reflect the acquisition of Micro Dyno Instruments, Inc.

1968

Revenue \$14,558,436

Earnings 223,843

Shr Ernd .27

=Restated to reflect the Federal income tax surcharge.

GENERAL ELECTRIC CO.

3 Months Ended March 31

1969

Revenue \$2,004,000,000

Earnings 77,516,000

Shr Ernd .96

*Restated to reflect the Federal income tax surcharge.

WESTERN UNION TELEGRAPH

3 Months Ended March 30

1969

Revenue \$6,500,000

Earnings 34,300,000

Shr Ernd .37

*Estimated by the company.

ADVANCED COMPUTER

TECHNIQUES CORP.

9 Months Ended Dec. 31

1969

Revenue \$1,754,889

Earnings 70,842,000

Shr Ernd .12

*Restated to reflect 2-for-1 stock split in June 1968.

RAYTHEON CORP.

3 Months Ended March 31

1969

Revenue \$23,097,000

Earnings 7,966,000

Shr Ernd .54

*Restated to include operations of GEC Corp., acquired in Nov. 1968 on a pro rata basis.

=Adjusted for 2-for-1 stock split in June 1968.

YRC

3 Months Ended March 31

1969

Revenue \$1,754,889

Earnings 70,842,000

Shr Ernd .12

*Restated to reflect the first full year of operations.

RCA

3 Months Ended March 31

1969

Revenue \$769,000,000

Earnings 40,800,000

Shr Ernd .63

=Includes non-recurring start-up costs of company's proprietary system, Gaithersburg, Md.

=Includes 2-for-1 stock split in June 1968.

Orders and Installations

Marquardt Corp. of Ogden, Utah, has installed a Honeywell Model 120 computer system for general business applications.

Real Time Systems Limited of London, England, has ordered three Scan-Data Model 300 PCR systems for multifont, handprint, multidocument loading; journal tape transport; and online display and character insertion.

Weinstein General Hospital and Ohio Valley Hospital of Steubenville, Ohio, have ordered National Cash Register Century 100 computer systems for inventory accounting.

County Data Processing Center in Elmira, N.Y., has installed a Univac 9300 system to expedite a number of local government operations.

S.H. Benson Ltd. of Kingsway, London, England, has ordered an International Computers Limited 1901A computer to be employed in the production of TV time booking orders from information read directly from documents marked by advertising time buyers.

The Davis-Jesse Nuclear Power Station of the Toledo Edison Co., Ottawa County, Ohio, has ordered a Bailey 880 nuclear instrumentation and reactor projection system, a 721 electronic analog control system, and an 835 computer for control of both nuclear and non-nuclear units of its steam supply system.

ADVANCED COMPUTER TECH.

9 Months Ended Dec. 31

1968

Revenue \$1,754,889

Earnings 70,842,000

Shr Ernd .13

COMPUTER EQUIPMENT CORP.

Year Ended Dec. 31

1968

Revenue \$1,754,889

Earnings 69,000

Shr Ernd .07

*Estimated by company to include acquisitions on a pooling-of-interests basis.

COMPUTER EQUIPMENT CORP.

INSTALLATIONS CORP.

Year Ended Dec. 31

1968

Revenue \$1,754,889

Earnings 69,000

Shr Ernd .05

NATIONAL COMPUTER

ANALYSTS, INC.

Year Ended Dec. 31

1968

Revenue \$1,754,889

Earnings 69,000

Shr Ernd .05

*Includes non-recurring start-up costs of company's proprietary system, Gaithersburg, Md.

=Includes 2-for-1 stock split in June 1968.

UNITED DATA

CENTERS, INC.

Year Ended Dec. 31

1968

Revenue \$2,272,238

Earnings 69,343

Shr Ernd .05

*Report covers the first full year of operations.

RCA

3 Months Ended March 31

1969

Revenue \$769,000,000

Earnings 40,800,000

Shr Ernd .63

The new firm has been incorporated as the Pryor Computer

Cyphernetics' Goal: National Service

ANN ARBOR, Mich. — Formation of a national computer service complex, which will be made available to business and industry through a time-sharing network, has been announced.

Cyphernetics Corp., according to Charles W. Misler, president, will offer clients an advanced time-sharing network, advanced software development, computer graphics, and computer management services.

Misler said Cyphernetics Corp. will be in full operation by July 1, with executive offices at 2290 First National Building.

Misler said the new company will make available through simplified languages for the non-specialist, large-scale computer power which is not subject to the many restrictions in present day, smaller time-sharing systems.

NORTHRIDGE, III. — Pryor Computer Industries has established a new subsidiary which will serve computer users of all sizes in the areas of systems analysis and programming, according to Albert M. Loring.

The new firm has been incorporated as the Pryor Computer

Software Corp., with offices at 209 S. LaSalle St., Chicago.

The firm operates as an autonomous unit of Pryor Computer Industries, and offers systems programming services, working on-site if desired by clients.

New Companies

Company to Sell U.S. Programming Abroad

NEW YORK — Programming Sciences Corp. has announced that it has entered into an agreement with Great West Saddlery, an investment and holding company, to establish a wholly-owned international computer software and systems programming organization based in London and operating worldwide outside the United States and Canada.

The new company, to be known as Programming Sciences International, will bring advanced United States concepts of systems development to overseas users of American and European data processing equipment, according to Albert M. Loring, president.

Firm to Specialize in 'Useful' Packages

NEW YORK — The establishment of Consolidated Software Inc., a new firm specializing in software packages, has been announced.

The company will engage in the marketing of generally useful software packages, according to William G. Debs, president.

Consolidated Software was formed as a spin-off of Programming Sciences, an established software firm based in New York, and will operate as a partly owned subsidiary of Programming Sciences.

The firm has acquired substantially all the assets of Software Resources Corp., and has also acquired from Programming Sciences Corp. a number of software packages developed by Programming Sciences or for which Programming Sciences has held manufacturing rights. Robert V. Loring, who founded Software Resources, will serve as the executive vice-president of Consolidated Software.

Headquarters for the new company are at 235 E. 42nd St., New York; the Los Angeles office is at 1901 Avenue of the Stars.



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On-line registration is available until April 25. For advance registration attach this ad and your check to your letterhead and mail it to:

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SDS to Construct Facility in Maryland

ROCKVILLE, Md. — Scientific Data Systems, the California-based computer manufacturer, has announced plans for the construction of a \$2.4-million computer facility in Rockville to house SDS's Washington-based marketing, systems engineering, and customer service departments.

When completed in December 1969, the 78,000 sq ft facility will initially accommodate 200 SDS personnel involved in the analysis, design, implementation, sale, and support of computer systems. It will also house industrial, and defense activities.

The new facility will permit SDS to service Eastern customers more efficiently by providing a centrally located Eastern base for systems support and implementation, the company says.

Standard SDS computers shipped from the company's California plant are modified in Rockville for specific operations as monitoring hospital patients, intensive care wards, processing telemetry data from aircraft and space satellite systems, controlling private and public data communication networks, signal processing, and event simulation activities.

The new facility will replace three leased plants presently being used in the Rockville area and is expected to utilize 100,000 sq ft of floor space. The new building, according to the company, will accommodate an annual equipment shipment rate of approximately \$20 million and the building's design will permit easy expansion to support \$50 million in annual shipments.

Third Center Opened

UNION TOWNSHIP, N.J. — Scientific Data Systems will open its third electronic data center facility in April. The center will be managed by Tom Stages, formerly with Metro Data Services.

On-Line Opens Two Offices

NEW YORK — On-Line Systems, a computer time-sharing services firm providing remote computer services to its customers by phone lines, has opened two new offices. The company, which has opened a New York branch office

headed by John T. Coxhead. An office has also been opened in Buffalo with John R. Barrick as manager.



Cullinane Opens Office

ALEXANDRIA, Va. — Cullinane Corp. has announced the opening of its new regional marketing office at 720 N. Saint Asaph St. to be headed by new Vice-President Arthur J. Ungerleider.

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Afips Records Called Inadequate 15% of Assets Are Not Verified

DETROIT — Major inadequacies in accounting records, doubt about the existence of some assets and the lack of a formal set of books or of any audit by an independent certified public accountant were revealed in a report on the American Federation of Information Processing Societies by Jerome J. Ettinger, C.P.A. The report to the Afips Executive Committee and the Afips Board of Directors came to light last week.

Ettinger said that beginning balances for a newly established general ledger had to be developed simply from documents, work papers, etc., and from the financial statements prepared by Thomas J. Byron Jr., of Concord, Mass., the auditor of Concord. Mass., the previous auditor.

Bruce Gilchrist, Afips executive director told CIO that Afips officials were quite convinced that all the assets did in fact exist, but that the amount of assets had merely been typical of the type of comment involved when a new auditor took over a set of accounts. He said that the committee had been helpful to Afips and that Afips intended to improve many of its procedures to match the wishes of the new auditor.

"We are a growing organization and this is typical of a growing organization's problems," he said.

Byron, contacted by Computerworld, said no one had asked his firm for any assistance or had queried any of its entries in the accounting papers, and are quite ready to substantiate our entries," he said.

The new auditor said that 85% of the assets had been verified but left the fate of the other 15% up to a check of about \$100,000 in the site.

Asked about the fact that there was no general ledger, Byron said this was true but said he believed that the documents which had been used by the committee had been in adequate detail to permit proper audits. The work in his office had been handled by certified public accountants, and he pointed out that as a management auditor with more than 20 years of experience, he was able to issue both certified and uncertified accounts. He also pointed out that Afips had successfully gone through two IRS audits "which were in some depth."

Ettinger reported that as well as the 1967 financial records of the 1965 fall and 1968 spring annual conferences, disbursements had been examined and, "in most cases," disbursements were supported by signatures of company management sufficient to approve them. No reference was made to the number of unsupervised disbursements nor to the amount of money involved in such expenditures.

The report revealed that Simulation Councils had borrowed \$15,000 from Afips late in 1967 for a one-year period. Simulation Councils cast one of the three votes needed to pass the new Afips constitution in January.

A special appropriation for member societies netted ACM a windfall of \$66,000 and Simulation Councils just over \$16,000 just prior to the vote. This was in addition to the general appropriation of approximately \$40,000 and \$8,000 respectively, which would have been made in any case. Simulation Councils had its headquarters and the ACM had its windfall to try, unsuccessfully, to survive the year's financial storms.

Afips, at the end of 1968 after allowing for the special distribution, apparently had a retained balance of \$150,000 as far as the books were concerned.

Previous audits had been provided regularly by Byron and, according to his reports, were usually based on the books, records, correspondence, and treasury memorandum." This was stated to have been in accordance with generally accepted auditing standards and to have been based on the terms of accounting records that Byron considered necessary.

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